



AF/1617 FFW

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:) Atty. Dkt. No. 00.05.12.1
Steven B. Laramay and) Art Unit: 1617
John H. Schneider)
Serial No. 09/770,931) Examiner: Gina C. Yu
Filing Date: January 26, 2001)
Title:) Duncan, Oklahoma 73534
ENCAPSULATED COMPOSITIONS) Date: June 3, 2004

REQUEST FOR REINSTATEMENT OF APPEAL

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

Applicants respectfully request the Commissioner to reinstate the Appeal filed December 15, 2003.

A Supplemental Brief is attached and no new amendments, affidavits or other evidence is submitted. (MPEP 1208.02)

The prosecution of this application has been long and confusing. A chronological history of the prosecution is attached. The application has now been the subject of **three** Final Rejections of the **same** claims. Two references have been withdrawn and then reinstated. One of those two was initially a primary reference and is now a tertiary reference. The indecision of the Examiner is apparent and has been a burden on Applicants.

The Second Final Rejection was mailed by the PTO on September 23, 2003. Applicants responded to the Second Final Rejection on November 5, 2003. A Notice of Appeal was filed by Applicants on December 15, 2003. The Notice of Appeal included the required fee.

The reply of the Examiner to the response was mailed by the Patent Office on December 15, 2003. It was not delivered before the Notice of Appeal was mailed.

Applicant filed a BRIEF ON APPEAL on January 27, 2004. The BRIEF included the required fee.

The Examiner responded to the Brief in a paper mailed by the PTO on April 8, 2004. The paper was not timely because it was mailed more than 2 months after the filing date of the Brief. (MPEP 1208) The response was not an answer, as contemplated by the provisions of

MPEP 1208, but was, instead, a THIRD FINAL REJECTION which purports to reinstate rejections which were allegedly made in an Office Action dated May 12, 2003.

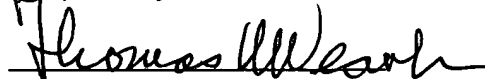
It is submitted that the paper mailed by the Examiner on April 8, 2004, was not properly made the subject of a Final Rejection. The provisions of MPEP 1208.02 prescribe conditions which must exist to justify issuing a final rejection upon reopening prosecution after appellants brief has been filed. The conditions did not exist.

The Examiner states at page 2 of the paper mailed April 8, 2004, that the various rejections under Mitchell et al., Vijayendran et al., Walles et al. and Garcia et al., "....as indicated in the Office Action dated May 12, 2004(sic) are maintained for the reasons of record therein." Note that Walles et al. and Garcia et al. are the references "reinstated" in the Third Final Rejection.

Applicants responded to the action of May 12, 2003, in a paper mailed July 8, 2003. (The Examiner, in the Second Final Rejection, erroneously referred to the response mailed on July 8, 2003, as the "communication filed on 27 June 2003.") The response of July 8, 2003, included, by reference, the papers filed by Applicants on April 24, 2003, and December 11, 2002, each of which included remarks directed to Walles et al. and Garcia et al. The paper of April 24, 2003, was directed to the First Final Rejection mailed March 25, 2003. The paper of December 11, 2002, was directed to the office action mailed October 22, 2002, and immediately preceded the First Final Rejection.

The enclosed Supplemental Brief addresses matters included in the initial Brief; it formally traverses the rejections based on the "reinstated" references; and it comments on arguments newly presented by the Examiner.

Respectfully submitted,



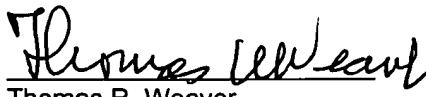
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CERTIFICATE OF MAILING

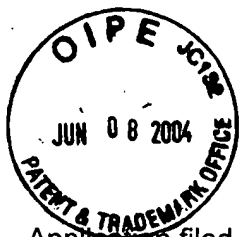
I hereby certify that the within and foregoing document, together with the attachments referred to therein, if any, is being deposited by the undersigned with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on the date written just below my signature.



Thomas R. Weaver

Registration No. 25,613

June 3, 2004
Date



Chronological History of USSN 09/770,931

1. Application filed January 26, 2001.
2. Office Action mailed March 7, 2002; Requirement to elect a single species for prosecution; Signed by Supervisory Primary Examiner.
3. Paper mailed April 4, 2002; Responded to requirement mailed March 7, 2002; Canceled original claims 1-15, added new claims 16-33.
4. Office Action mailed July 3, 2002; Requirement to elect a single species for prosecution; Signed by Primary Examiner.
5. Paper mailed July 24, 2002; Responded to requirement mailed July 3, 2002; Made elections with traverse.
6. Office Action mailed October 22, 2002; Claims 29, 32 and 33 withdrawn from consideration; Rejected claims 16, 18, 20, 21 and 23-28 as being obvious over Walles (US 4,756,844) in view of Vijayendran (US 5,173,526); Rejected claims 19, 22, 30 and 31 as being obvious over Walles and Vijayendran in view of Garcia (US 6,436,540 B1); Rejected claim 17 as being obvious over Walles and Vijayendran in view of Newlove (US 5,948,735); Signed by Supervisory Primary Examiner.
7. Paper mailed December 5, 2002; Responded to Office Action mailed October 22, 2002; Canceled claim 31, added new claims 34 and 35; Walles, Vijayendran, Garcia and Newlove were discussed.
8. First Final Rejection mailed March 25, 2003; Rejected claims 16, 18, 20, 21 and 23-28 as being obvious over Walles (US 4,756,844) in view of Vijayendran (US 5,173,526); Rejected claims 19, 22, 30, 34 and 35 as being obvious over Walles and Vijayendran in view of Garcia (US 6,436,540 B1); Rejected claim 17 as being obvious over Walles and Vijayendran in view of Newlove (US 5,948,735); Signed by Supervisory Primary Examiner.
9. Paper mailed April 21, 2003; Responded to First Final Rejection mailed March 25, 2003; Walles, Vijayendran, Garcia and Newlove were discussed.
10. Office Action mailed May 12, 2003; Reopened prosecution; Rejected claims 16, 17 and 21 as being obvious over Mitchell et al. (US 5,741,433) in view of Vijayendran; Rejected claims 19, 22, 24-28 and 30 as being obvious over Mitchell in view of Vijayendran and Walles, "as applied to claims 16-18, 20, 21, 23, 34 and 35 as applied above and further in view of Garcia." Signed by Supervisory Primary Examiner.

It is clear that the Office Action completely changed the Examiner's theory. It is clear that Mitchell was added as a new primary reference; that Walles was demoted from primary status to tertiary status, and that Newlove was completely withdrawn. In view of the withdrawal of Newlove, it seems that the Examiner, with regard to claim 17, takes

110 the position that Mitchell provides what the combination of Walles and Newlove do not.
 111 The status of Garcia was demoted from tertiary status to some lesser supporting role.

112 The confusion and indecision of the Examiner is palpable and is placing an unfair
 113 burden on Applicants.

114 The rejection of claims 18-20, 22-28, 30, 34 and 35 is totally unclear because the
 115 connection between the claims being rejected and the combination of references used
 116 to support the rejection is obscure, at best. The claim pattern makes clear that claims
 117 16, 17, 19, 24 and 26 are connected. What combination of references applies to those
 118 claims? The claim pattern makes clear that claims 16, 17, 21 and 35 are connected.
 119 What combination of references applies to those claims? The claim pattern makes clear
 120 that claims 16, 17, 18, 20, 22, 25, 27 28 and 30 are connected. What combination of
 121 references applies to those claims? The claim pattern makes clear that claims 16, 17,
 122 18, 20, 23 and 24 are connected. What combination of references applies to those
 123 claims?

124 11. Paper mailed July 8, 2003; Responded to Office Action mailed May 12, 2003;
 125 Mitchell, Vijayendran were discussed; The discussions of Walles and Garcia contained
 126 in the paper mailed April 21, 2003, were incorporated by reference.

127 12. Second Final Rejection mailed September 23, 2003; Rejected claims 16-28, 30, 34 and
 128 35 as being obvious over Mitchell et al. in view of Vijayendran; No mention is made of
 129 any other reference, including Walles and Garcia; Signed by Supervisory Primary
 130 Examiner.

131 13. Paper mailed November 5, 2003; Responded to Second Final Rejection mailed
 132 September 23, 2003; Paper noted the absence of Walles and Garcia and indicated
 133 the apparent allowability of claims 18-20, 22-28, 30, 34 and 35. See item 10 above,
 134 paragraph 2.

135 14. Advisory action mailed December 15, 2003, had advantage of paper of November 5,
 136 2003, but failed to add Walles and Garcia which were not included in the Second Final
 137 Rejection.

138 15. Brief on Appeal mailed January 27, 2004; Emphasized the absence of Walles and
 139 Garcia.

140 16. Third Final Rejection mailed April 8, 2004; Reopened prosecution; Walles and Garcia
 141 reinstated as references; Final status of the action effectively prevents Applicants from
 142 responding to new arguments asserted with regard to these references.



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Serial No. 09/770,931) Examiner: Gina C. Yu
Filing Date: January 26, 2001)
Title:) Duncan, Oklahoma 73534
ENCAPSULATED COMPOSITIONS) Date: June 3, 2004

SUPPLEMENTAL BRIEF ON APPEAL

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

INTRODUCTION

This is Appellants' Supplemental Brief on Appeal which is in response to the **THIRD** Final Rejection which was mailed on April 8, 2004.

The Third Final Rejection, which is the Examiner's response to Appellants' Brief in support of the Appeal from the **SECOND** Final Rejection, purports to reinstate previous rejections based on US Patent 4,756,844 to Walles and US Patent 6,436,540 B1 to Garcia.

The Second Final Rejection was mailed by the Patent Office on September 23, 2003. Applicants' response to the Second Final Rejection was mailed on November 5, 2003. The reply of the Examiner to that response was mailed by the Patent Office on December 15, 2003. The Notice of Appeal from the Second Final Rejection was mailed on December 15, 2003, and Appellants' Brief was mailed on January 27, 2004.

This Brief is filed in triplicate. The prescribed fee of \$330.00 accompanied the Brief mailed on January 27, 2004.

REAL PARTY IN INTEREST

Fritz Industries, Inc., a Corporation of the State of Texas, is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no known appeals and/or interferences related to the subject matter of the claims appealed herein.

35 STATUS OF CLAIMS

36 A total of 19 claims are pending in this application including one independent claim 16
37 and eighteen dependent claims 17 through 30, and 32 through 35. Dependent claim 31 has
38 been canceled. Dependent claims 29, 32 and 33 have been withdrawn from consideration.
39 Claims 16-28, 30, 34 and 35 stand rejected. The rejection of claims 16-28, 30, 34 and 35 is
40 appealed.

41 The dependency pattern of the claims on appeal is attached hereto as Enclosure I. A
42 copy of the claims involved in the appeal is attached as Enclosure II. The content of Enclosure
43 II is taken from Applicants' response mailed July 8, 2003.

44 SUMMARY OF INVENTION

45 The parenthetical information indicates disclosure support of each claim appealed by
46 page, P, and line, L.

47 This invention is an article of manufacture comprised of a capsule and a chemical
48 composition. The capsule comprises a membrane wall surrounding a hollow interior. The
49 composition is enclosed in the hollow interior of the capsule. The membrane wall is permeable
50 to water and aqueous solutions, but is not soluble in aqueous liquids. (P.5, L.105-110, Claim
51 16)

52 The thicker the membrane wall, generally, the slower the release of the composition
53 from the hollow interior of the capsule since it takes longer for an aqueous liquid in contact with
54 the exterior surface of the capsule to diffuse through the wall of the capsule. (P. 11, L. 261-264)

55 The composition enclosed in the hollow interior of the capsule is, preferably, a solid,
56 water-soluble chemical. The composition is not reactive with, soluble in nor a solvent for the
57 membrane wall. (P.6, L.124-126, L. 141, Claim 16) The composition can be selected from a
58 wide variety of materials including enzymes, organic and inorganic acids, bases, salts and
59 oxidizing agents. (P.6, L. 128-129, P. 9, L. 200-207, Claim 1, Claim 17)

60 The membrane wall can be a first material, or it can be a composite material comprised
61 of the first material and a second material different from the first material. The membrane wall
62 is not reactive with, soluble in or a solvent for the composition enclosed in the capsule, or with a
63 liquid or second composition in contact with the exterior of the membrane wall. (P.5, L. 110-123,
64 Claim 16, Claim 18) The composite material is present in the article in an amount in the range
65 of from about 10 to about 50 percent composite material by weight of the article. (P.8, L.236-
66 239, Claim 18)

67 The first material is a urethane/vinyl hybrid polymer (P.5, L.115, Claim 16), and is
68 disclosed in U.S. Patent 5,173,526 to Vijayendran et al. (P.7, L.154-171; P.8, L.172-180, Claim
69 16) The first material is **not** a mere blend of a polyurethane and an acrylic polymer. (P.7,
70 L.170-171) The first material is universally compatible. This is demonstrated by the previously
71 mentioned wide variety of compositions which can be placed in the hollow interior of the
72 capsule. (P. 13, L. 308-316)

73 The first material can be cross linked with polyaziridines, carbodiimides, epoxies and
74 metal ion cross linkers. (P.8, L.181-186, Claim 19, Claim 22, Claim 24, Claim 25, Claim 30,
75 Claim 34, Claim 35)

76 When the membrane wall is the composite material, then the second material is a
77 particulate solid having a particle size in the range of from “**about** 1 to about 15 microns”
78 present in the composite material in an amount in the range of from an amount greater than
79 about 0 to about 50 percent second material by total weight of the composite material. (P.8,
80 L.187-195, Claim 18) The second material can include silica, calcium carbonate, titanium
81 dioxide, barium sulfate, calcium sulfate and mixtures thereof. (P.9, L.198-199, Claim 20, Claim
82 28)

83 The particle size of the second material plays an important role in the diffusion process.
84 In this regard, it is believed that particles having a size of less than 1 micron, i.e., submicron
85 particles, **do not operate** to dissipate internal pressure at a rate sufficiently great to prevent
86 rupture of the membrane wall. (P.13, L. 295-301) However, it is to be understood that it is
87 **difficult to completely exclude** all particulate solids having a size of less than 1 micron, thus,
88 it is preferred that concentration of particulate solids having a size less than about 1 micron
89 should not exceed about 25 percent by weight of particulate solids present in the composite
90 material. (P.8, L.193 to P. 9, L.197)

91 The chemical composition enclosed in the capsule can be substantially any water-
92 soluble material including those selected from the group consisting of alkali, alkaline earth metal
93 and ammonium halides, oxides, hydroxides, carbonates, bicarbonates, perborates, peroxides,
94 percarbonates, bisulfates and persulfates. (P.9, L.200-207, Claim 17)

95 The chemical composition has a particle size in the range of from about 10 to about 60
96 mesh US Sieve series. (P.10, L. 243 to P.11, L.247, Claim 21, Claim 23, Claim 26, Claim 27)

97 In use, the exterior surface of the capsule is placed in contact with a liquid containing
98 water. The membrane wall is not reactive with, soluble in nor a solvent for liquid in contact with
99 the exterior surface of the capsule. The water diffuses through the membrane wall, contacts
100 and dissolves the composition in the interior of the capsule. The composition, now in aqueous
101 solution, then diffuses through the membrane wall to the exterior of the capsule. During the
102 diffusion, which can extend over a period of time, the capsule remains intact. It does not burst.
103 The transfer of the composition from the interior of the capsule through the membrane wall to
104 the exterior of the capsule is gradual in nature. The transfer is not sudden in nature. (P.12,
105 L.269 to P.13, L.294)

106 THE REJECTIONS

107 Please refer to the claim dependency pattern, Enclosure I, when considering the
108 following rejection schedule.

109 1. Claims 16, 17 and 21 stand rejected under 35 USC 103(a) as being obvious over
110 Mitchell et al. (US 5,741,433) in view of Vijayendran et al. (US 5,173,526). That rejection is
111 traversed.

2. Claims 16, 17, 21 and claims 18, 20, 23, 34 and 35 stand rejected under 35 USC 103(a) as being obvious over Mitchell et al. in view of Vijayendran et al. and further in view of Walles et al. (US 4,756,844). That rejection is traversed

It seems evident that the Examiner relies upon Walles in combination with Mitchell and Vijayendran to support the rejection of claims 18, 20, 23, 34 and 35. What does Walles suggest to a person skilled in the art that the combination of Mitchell and Vijayendran does not suggest? It is questionable, at best, that Walles has anything at all to do with claims 34 and 35.

3. Claims 16, 17, 21, claims 18, 20, 23, 34, 35 and claims 19, 22, 24-28 and 30 appear to be rejected under 35 USC 103(a) as being obvious over Mitchell et al. in view of Vijayendran et al. and further in view of Walles et al. (US 4,756,844) and Garcia et al. (US 6,436,540 B1). That rejection, which includes all the claims on appeal, is traversed.

It seems evident that the Examiner relies upon Walles and Garcia in combination with Mitchell and Vijayendran to support the rejection of claims 19, 24 and 26. What does Garcia and Walles suggest to a person skilled in the art that the combination of Mitchell and Vijayendran does not suggest? It is questionable, at best, that Walles has anything at all to do with claims 19, 24 and 26.

It also seems evident that the Examiner relies upon Garcia in combination with Mitchell, Vijayendran and Walles to support the rejection of claims 22, 25, 27, 28 and 30. It is questionable, at best, that Garcia has anything at all to do with claims 27 and 28.

ISSUES

ISSUE 1

The combination of Mitchell and Vijayendran to reject the claims is not proper. The combination of Mitchell and Vijayendran, taken as a whole, does not suggest the claimed subject matter.

ISSUE 2

There is no suggestion in either Mitchell or Vijayendran to combine one with the other to produce the claimed subject matter.

ISSUE 3

The combination of Mitchell, Vijayendran and Walles to reject the claims is not proper. The combination of Mitchell, Vijayendran and Walles, taken as a whole, does not suggest the claimed subject matter.

ISSUE 4

There is no suggestion in either Mitchell or Vijayendran or Walles to combine one with the other to produce the claimed subject matter.

146 **ISSUE 5**

147 The combination of Mitchell, Vijayendran, Walles and Garcia to reject the claims is not
148 proper. The combination of Mitchell, Vijayendran, Walles and Garcia, taken as a whole, does
149 not suggest the claimed subject matter.

150 **ISSUE 6**

151 There is no suggestion in either Mitchell or Vijayendran or Walles or Garcia to combine
152 one with the other to produce the claimed subject matter.

153 GROUPING OF CLAIMS

154 Claims 16-28, 30, 34 and 35 are placed by the Examiner in three groups: 16, 17 and 21;
155 18, 20, 23, 34 and 35; and 19, 22, 24-28 and 30. Each group is the subject of a separate
156 rejection. The claims of these groups do not stand or fall together. There are eight different
157 claim groups included within the three groups which are separately patentable. These claim
158 groups are:

- 159 1. Claim 16, and those which depend therefrom;
- 160 2. Claim 17, which includes the limitations of claim 16, and those which depend
161 from claim 17;
- 162 3. Claim 18, which includes the limitations of claims 16 and 17, and those which
163 depend from claim 18;
- 164 4. Claim 19, which includes the limitations of claims 16 and 17, and those which
165 depend from claim 19;
- 166 5. Claim 22, which includes the limitations of claims 18 and 20, and those which
167 depend from claim 22;
- 168 6. Claim 28, which includes the limitations of claim 22, and those which depend
169 from claim 28;
- 170 7. Claim 34, which includes the limitations of claims 18 and 20; and
- 171 8. Claim 35, which includes the limitations of claims 16, 17 and 21.

172 ARGUMENT

173 The **problem** confronted by Appellants for solution was to identify a material useful to
174 form the wall of a capsule having controlled release properties, wherein the material would
175 function by diffusion and would also resist a caustic environment exhibited by a chemical
176 enclosed in the capsule and by a chemical in contact with the exterior of the capsule. Such
177 caustic chemicals would include organic and inorganic acids, bases, salts and oxidizers. In

short, Appellants were seeking to find a universal material. The prior art at the time of the invention did include capsules which did exhibit controlled release properties. These capsules did exhibit a variety of release mechanisms including external crushing, internal rupture, disintegration of the wall material and diffusion of liquid through the wall material. (P.2, L.29-38; P. 3, L.59-63) Diffusion is not new. The essential differences between the prior art capsules has been, and is, the material of construction of the wall. (P.2, L.45-48)

ISSUE 1

The combination of Mitchell and Vijayendran to reject the claims is not proper. The combination of Mitchell and Vijayendran, taken as a whole, does not suggest the claimed subject matter.

Appellants claim a hollow capsule which contains a chemical composition, wherein the wall of the capsule is a membrane comprised of a polyurethane-vinyl polymer dispersion. In the invention, an aqueous liquid diffuses through the membrane wall to the interior of the capsule, dissolves the chemical composition to form a solution which then diffuses through the membrane wall to thereby release the composition from the interior of the capsule. Applicants discovered this diffusion property of a membrane wall made with the polyurethane-vinyl polymer dispersion and realized its universal utility in a capsule having controlled release properties. The membrane wall, as set forth in independent **claim 16**, is comprised of a urethane/vinyl hybrid polymer which is disclosed in U.S. Patent 5,173,526 to Vijayendran. The chemical composition held in the capsule can include a wide variety of different chemical species such as enzymes, organic and inorganic acids, bases, salts and oxidizing agents. (**claim 17**, P.6, L.124-135)

Mitchell does not disclose or suggest "a polyurethane-vinyl polymer dispersion" and, accordingly, cannot suggest that a polyurethane-vinyl polymer dispersion is useful as a film former having controlled release properties. (Mitchell, col. 3, lines 43-45, col. 6, lines 1-5)

Mitchell did not make or suggest the discovery of this invention and made no suggestion of the universal utility of the material.

Mitchell, in Table 2, discloses a variety of specific compositions including at least two which, "were not acceptable coating materials due to the sticky nature of the polymers" and two which, "were found to be non film formers." The two "sticky" polymers were vinyl polymers. One of the "non film formers" was a vinyl polymer. Table 2 of Mitchell also listed two polyurethanes, but no working example is provided, and no comment is made with regard to the utility of a polyurethane as a film former having controlled release properties. There is, accordingly, nothing in Mitchell to suggest that a "urethane/vinyl hybrid polymer" as set forth in claim 16 could be employed to produce a hollow capsule having a membrane wall which is "permeable to water and aqueous solutions" wherein the hollow interior of the capsule can maintain a wide variety of different chemical species such as enzymes, organic and inorganic acids, bases, salts and oxidizing agents as stated in claim 17.

Mitchell makes no suggestion that a combination of the sticky/non film former vinyl with the polyurethane would produce a satisfactory membrane. In fact, as previously noted, the

urethane/vinyl hybrid polymer of claim 16 is not a mere blend of a polyurethane and an acrylic polymer. (P.7, L.170-171). It is submitted that the factual data actually provided by Mitchell teaches away from such a combination. Mitchell does not suggest "a polyurethane-vinyl polymer dispersion" and it is not reasonable to assert that he does. The negative teaching of Mitchell is clearly indicated by the disclosed sticky nature and lack of utility of some vinyl polymers and the notable absence of any display of enthusiasm for polyurethane.

Mitchell stated, "Any type of coating material conventionally known in the art which provides controlled-release properties may be used in the present invention." (Col. 3, lines 43-45) In this regard, the composition disclosed and claimed by Vijayendran was known in the art to be a coating material. The information was public on the date that Mitchell et al filed their application. However, there is no indication in Mitchell or Vijayendran that the composition of Vijayendran on that date was "conventionally known in the art" to be a film forming material which provides controlled-release properties. A film forming material having controlled-release properties is not suggested by a composition known to be a coating material. Mitchell failed to recognize the utility of the Vijayendran material and the Patent Office placed the subject matter of the two patents in two different technical classifications. It was left to Applicants to discover the universal utility of the composition disclosed by Vijayendran to justify using it to form the membrane wall of a capsule.

Vijayendran does disclose a flexible surface made from a urethane/vinyl hybrid polymer dispersion which will protect a substrate, such as paper, metals, plastics and wood, from solvents, corrodants and abrasives. What is meant by the word protect? Does protect mean that the urethane/vinyl hybrid polymer coating will permit a solvent to diffuse through the flexible surface and dissolve the substrate? Applicants contend that it does not. It is inherent in this teaching that water, a solvent, will not pass through a flexible coating to contact the substrate. Vijayendran does not teach anything else. There is no disclosure that the composition will even form a film. Thus, there is no suggestion in this teaching that water will pass through a film made with the very same composition. In short, there is no suggestion in this teaching that the composition of Vijayendran was, "conventionally known in the art" to be a film forming material which provides controlled-release properties.

The Examiner has placed considerable emphasis on the flexible nature of the Vijayendran material as a coating for substrates at least within the context of the Vijayendran disclosure. The Examiner leaped, with no defined reason to justify the leap, from a "flexible surface" which does protect a substrate, to a membrane having diffusion properties which does not protect a substrate. Any number of materials are flexible, but all such materials have no known function as a membrane. Steel, leather, paper, aluminum foil and rubber are but a few flexible materials which are not conventionally known in the art to provide controlled-release properties. The fact of flexibility does not translate into a film which permits diffusion.

As employed in the article of this invention, the Vijayendran material **DOES NOT PROTECT THE SUBSTRATE** (the composition enclosed in the capsule) from anything. If it did, then the material would not be operable in this invention. Vijayendran does not teach and does not suggest the use of his composition as a membrane wall of a capsule. It is not the purpose of a capsule having controlled-release properties to protect the substrate.

The combination of Mitchell and Vijayendran, taken as a whole, does not suggest the claimed subject matter.

ISSUE 2

There is no suggestion in either Mitchell or Vijayendran to combine one with the other to produce the claimed subject matter.

It is accepted in the law of obviousness that a reference must clearly suggest to a person skilled in the art at the time that an invention is made, that a feature disclosed in one reference may be combined with a feature disclosed in another reference in order to obtain the claimed subject matter. What is resident in the disclosures of Mitchell and Vijayendran to suggest that a combination of the two would produce the invention claimed herein? Nothing. The essential recognition is contained in the disclosure of Applicants. That teaching cannot be employed by the Examiner in **hindsight**.

What do Mitchell et al disclose?

A membrane wall which will permit water to pass through it from the exterior into the interior of the capsule, and through it from the interior to the exterior of the capsule. That property is not new.

What do Mitchell et al fail to disclose?

A membrane wall comprised of a urethane/acrylic hybrid polymer.
Crosslinking anything.
A membrane wall containing a particulate solid or any other second material.

What is the novel aspect of Mitchell et al?

Based upon the content of claim 1 of Mitchell, it is clear that the novel aspect of Mitchell et al is a polymeric coating material for a capsule,

“comprising terpolymers containing vinyl acetate, vinyl versatate, and alkyl(meth)acrylate monomer subunits.”

That polymer does not suggest a urethane/acrylic hybrid polymer.

What do Vijayendran et al disclose?

A flexible surface which will protect a substrate, such as paper, metals, plastics, and wood, from solvents, corrodants and abrasives. Inherent in this disclosure is a requirement that water shall not pass through the surface to thereby contact the substrate.

290 What do Vijayendran et al fail to disclose?

291 The use of a urethane/acrylic hybrid polymer as a membrane wall of a capsule.
292 The use of a urethane/acrylic hybrid polymer which will not protect a substrate.
293 Crosslinking a urethane/acrylic hybrid polymer.
294 Combining the urethane/acrylic hybrid polymer with a particulate solid or any other
295 second material.

296 There is no suggestion in Mitchell to replace his novel polymeric coating, which does
297 permit water to pass through it, with a urethane/acrylic hybrid polymer, which, as employed by
298 Vijayendran, does not permit water to pass through it. There is no suggestion in Vijayendran to
299 substitute a urethane/acrylic hybrid polymer, which does protect a substrate, for terpolymers
300 containing vinyl acetate, vinyl versatate, and alkyl(meth)acrylate monomer subunits, which do
301 not protect a substrate.

302 Given the above, what is the reason to combine Mitchell and Vijayendran? The two
303 patents disclose inventions which solve different problems. The two inventions employ different
304 chemistry to solve the different problems. What is disclosed in Mitchell to suggest to a person
305 skilled in the capsule art to combine Mitchell and Vijayendran to obtain a capsule? Similarly,
306 what is disclosed in Vijayendran to suggest to a person skilled in the capsule art to combine
307 Mitchell and Vijayendran to obtain a capsule which will permit water to pass through its wall
308 from the exterior into the interior, and through the wall from the interior to the exterior?
309 Vijayendran disclose a urethane/vinyl hybrid polymer to protect what is plainly a planar
310 substrate, such as paper, from a solvent. There is no suggestion in Vijayendran that water will
311 diffuse through a film made with that polymer. There is no suggestion that a film could even be
312 made with that polymer. Mitchell and Vijayendran are in different classes of art. The only
313 connection between Mitchell and Vijayendran is found in the disclosure of this invention. The
314 Examiner cannot employ the invention disclosed in an application to reject the application.

315 THERE IS NO REASON TO COMBINE MITCHELL AND VIJAYENDRAN. THE
316 EXAMINER HAS IMPROPERLY EMPLOYED THE DISCLOSURE OF THIS INVENTION AS A
317 GUIDE TO REJECT THE CLAIMS OF THIS INVENTION. THE REJECTION IS FATALLY
318 FLAWED AND SHOULD BE WITHDRAWN.

319 ISSUE 3

320 The combination of Mitchell, Vijayendran and Walles to reject claims 18, 20, 23, 34 and
321 35 is not proper. The combination of Mitchell, Vijayendran and Walles, taken as a whole, does
322 not suggest the claimed subject matter.

323 What do Walles et al disclose?

324 A membrane wall which will permit water to pass through it from the exterior into the
325 interior of the capsule.
326 A membrane wall which will burst when a quantity of water has passed through it from
327 the exterior of the capsule to the interior of the capsule.

328 What do Walles et al fail to disclose?

329 A membrane wall which will permit water to pass through it from the interior to
330 the exterior of the capsule.
331 A membrane wall comprised of a urethane/acrylic hybrid polymer.
332 Cross linking anything.
333 Solid particles in the membrane wall of a size greater than submicron.
334 Diffusion of water through a membrane from exterior to interior and from interior to
335 exterior.
336 A membrane wall which does not burst.

337 What is the novel aspect of Walles et al?

338 Based on the Jepson format employed in claim 29 of Walles, it is clear that the only
339 novel aspect of Walles is the existence of "submicron particles" in the membrane wall.

340 What does Walles suggest to a person skilled in the art that the combination of Mitchell
341 and Vijayendran does not suggest with respect to claims 18, 20, 23, 34 and 35? What is
342 resident in any of the three to suggest the combination? It is questionable, at best, that Walles
343 has anything at all to do with claims 34 and 35.

344 Walles et al disclose capsules containing chemical agents and methods of using the
345 capsules to treat a fluid in contact with the exterior of the capsules. In this regard Walles et al
346 disclose an encapsulated bleach as a laundry detergent additive.

347 Walles et al disclose capsules containing simple salts, such as calcium chloride and
348 potassium bisulfate (Col. 3, lines 23-24), enclosed in a membrane of styrene-butadiene rubber
349 (Col. 5, line 12). There is no suggestion in Walles to store caustic materials in the capsules.

350 Walles et al contain a group of claims (1-20) specifically drawn to a composition
351 comprised of an agent and a membrane which surrounds the agent. The membrane is further
352 comprised of "submicron particles." The agent is "suitable for use in a selected environment."
353 The chemical identity of the agent is generally defined in claims 9, 10, 11 and specifically
354 defined in claim 12. Ammonium persulfate is specifically claimed in Walles et al and, because it
355 is a bleach and an oxidizing agent, it is also named in claims 10 and 11.

356 Walles et al contain a group of claims (21-24) specifically drawn to a composition
357 comprised of a fabric laundering formulation in combination with a composition comprising an
358 oxidizing agent and a membrane which surrounds the agent. The membrane is further
359 comprised of "submicron particles." The oxidizing agent is suitable to react with an aqueous
360 environment to liberate a gas.

361 Walles et al contain a claim (29) specifically drawn to a composition comprised of an
362 agent and a membrane which surrounds the agent. The agent is "suitable for use in a selected
363 environment." The claim is drawn to an improvement comprising the membrane further
364 comprising "submicron particles" which are substantially inert to the membrane and the agent.

365 It is clear that the essential novelty of Walles et al resides in the presence in the
366 membrane of "submicron particles that are substantially inert to the membrane and the agent."
367 The following passages taken from the disclosure of Walles et al are cited to place the issue of
368 the submicron particles in the context of the invention.

369 The "BACKGROUND" portion of the disclosure of Walles et al specifically cites prior
370 U.S. Patent 3,952,741 which, according to Walles et al, "illustrates a controlled release system
371 based on osmotic bursting of a water permeable wall." (Col. 1, lines 63-65) It is plain, then,
372 that Walles et al is basically an improvement on the prior art and it remains, therefor, to
373 determine the scope and content of the novelty. Walles et al state that the invention is a
374 composition and method for increasing the uniformity of release time for a given quantity of
375 agent into a selected environment. (Col. 2, lines 26-28) The problem solved was to avoid
376 "essentially sequential releases" to prevent "undesirable local high concentrations" of agent.
377 (Col. 2, lines 18-20)

378 The Walles et al invention is an encapsulated composition that allows controlled release
379 of an agent at a "narrowly predetermined time." (Col. 2, lines 58 & 59) According to the
380 invention, the release of the agent as desired is effected by diffusion of the surrounding
381 environment through the membrane encapsulating the agent until the membrane **ruptures** and
382 releases the agent. (Col. 2, lines 62-67)

383 With respect to the "submicron particles," Walles et al disclose at Col. 2, line 67 to Col.
384 3, line 4, "This membrane has a quantity of inert compound incorporated into it. The inert
385 compound, called an anti-coalescent, operates to improve the uniformity of application of the
386 membrane, which in turn improves the uniformity and predictability of the release times of a
387 given sampling of agent."

388 Walles et al state at Col. 3, lines 12-23, "In one preferred embodiment the release
389 mechanism is that of simple osmotic diffusion, in which the increased volume within the
390 membrane due to the presence of a quantity of the environment material causes **rupture** of the
391 membrane and concurrent release of the agent to the environment at large. The diffusion of
392 the environment through the permeable membrane, resulting from the osmotic attraction and/or
393 hygroscopicity of the agent, increases the volume enclosed, resulting in distension of the
394 membrane and, eventually, its **rupture** and resultant release of the agent to the environment."

395 In another aspect, by appropriate selection of agent and environment to promote a
396 reaction which releases a gas, the distension of the membrane is hastened and therefor
397 hastens the **rupture** thereof. (Col. 3, lines 26-32) Walles et al refers to this "novel mechanism"
398 as "an environment-actuated, gas-assisted **rupture** mechanism." Col. 4, Lines 35-36

399 Walles et al then closes this explanation of reaction mechanism by stating at Col. 3,
400 lines 32-37, "The presence within the membrane material of a quantity of an inert anti-
401 coalescent compound alters the timing and reliability of **burst-type** release, as compared with
402 membranes of similar composition without an anti-coalescent, as will be described below."

403 Walles et al disclose at Col. 5, Lines 44-51, "An important aspect of the present
404 invention is that there is incorporated into the membrane material an amount of at least one

compound that is inert to both the agent and membrane matrix material, and which comprises particles having submicron diameters. Thus, the inert compound, which serves as an anti-coalescent as will be described below, should be essentially a finely comminuted powder of colloidal-size particles."

Walles et al, at Col. 6, Line 55 to Col. 7, Line 4, lists four main advantages to the addition of the anti-coalescent to the membrane. One of the advantages is said to be that the coating process employed improves the uniformity of the thickness of the membrane which makes the time of release more precisely determinable and further narrowing the time period required for complete release over a given batch.

Walles et al do not disclose or suggest the nature of the release mechanism if the particles incorporated in the membrane are larger than submicron, or even if a majority of the particles are larger than submicron. In this regard, recall from the previous description of Appellants invention that:

particle size of the second material plays an important role in the diffusion process. It is believed that capsules which contain particles having a size of less than about 1 micron, i.e., submicron particles, do not operate to dissipate internal pressure at a rate sufficiently great to prevent rupture of the capsule. (P.13, L. 295-301)

In a manufacturing operation it is difficult to completely exclude all particulate solids having a size of less than 1 micron, however, it is preferred that concentration of particulate solids having a size less than 1 micron should not exceed about 25 percent by weight of particulate solids present in the composite material. (P.8, L.193 to P. 9, L.197)

The teaching, inferences, disclosure and claims of Walles et al are all **limited** to submicron size particles and agent release by rupture. The only connection between Walles, Mitchell and Vijayendran is found in the disclosure of this invention. It is well established that the disclosure of an invention cannot be used as a basis to reject the invention.

There is no disclosure and no suggestion in Walles et al to substitute the urethane/vinyl hybrid polymer of this invention for the styrene-butadiene rubber used by Walles et al. There is no disclosure and no suggestion in Mitchell or Vijayendran et al to substitute the urethane/vinyl hybrid polymer of this invention for the styrene-butadiene rubber used by Walles et al or the "terpolymers containing vinyl acetate, vinyl versatate, and alkyl(meth)acrylate monomer subunits" of Mitchell.

There is no disclosure and no suggestion that styrene-butadiene rubber, urethane/vinyl hybrid polymer or terpolymers containing vinyl acetate, vinyl versatate, and alkyl(meth)acrylate monomer subunits are equivalents.

There is no disclosure and no suggestion in Mitchell, or Vijayendran or Walles that the rate of diffusion of an aqueous solution through a membrane comprised of a urethane/vinyl hybrid polymer can be controlled to prevent rupture of the membrane. There is no disclosure

and no suggestion in Mitchell or Vijayendran or Walles that an aqueous solution can in fact diffuse at all through a membrane comprised of a urethane/vinyl hybrid polymer. Finally, there is no disclosure and no suggestion in Mitchell or Vijayendran or Walles that a urethane/vinyl hybrid polymer can in fact be used as an encapsulating material.

All of the essential inventive features alluded to above are found solely and only in the disclosure of this invention. The Examiner's resort to the skilled artisan does not cure the deficiencies of the art to suggest the invention claimed herein.

The Examiner asserted (at page 4, lines 3-6 of the Office Action dated October 22, 2002) that Vijayendran suggested the substitution of "polyurethane-vinyl polymer" in the invention of Walles "because of the expectation of successfully producing controlled-release composition..." The Examiner failed to cite the location of the alleged suggestion and Applicants have failed to find it. However, inspection of Vijayendran clearly reveals (at column 2, lines 48-56 and column 6, lines 33-36) that the polyurethane-vinyl polymer is to be applied to protect substrates, such as glass, cloth, leather, paper, metal, plastic (such as polystyrene), foam, and wood. Such uses suggest that the substrates are to be protected from water. The capsule membrane of this invention does not protect the encapsulated chemical from water. Vijayendran et al clearly teach away from the use of the material in a process which requires the diffusion of water through the material to contact the encapsulated material. Vijayendran is not relevant as a secondary reference and should be withdrawn. Similarly, Walles, as now admitted by the Examiner, was not relevant as a primary reference on October 22, 2002, and is not now relevant as a tertiary reference. Walles should be withdrawn.

ISSUE 4

There is no suggestion in either Mitchell or Vijayendran or Walles to combine one with the other to produce the claimed subject matter.

The Examiner in the Office Action mailed May 12, 2003, stated,

"Mitchell and Vijayendran, discussed above, fails to teach using the second materials in the encapsulation as recited in the instant claims."

The Examiner also stated in the Office Action mailed May 12, 2003,

"Walles teaches controlled-release composition having a water permeable membrane comprising submicron particles (anticoalescent agents), which encapsulate a liquid or solid active agent."

In view of the express statements of the Examiner, what is there to justify the rejection of claims 18, 20, 23, 34 and 35? A disclosure of "submicron particles" cannot be said to suggest particles greater than submicron, even if, as explained above, 25% of the particles can be submicron.

481 **ISSUE 5**

482 The combination of Mitchell, Vijayendran, Walles and Garcia to reject claims 19, 22, 24-
483 28 and 30 is not proper. The combination of Mitchell, Vijayendran, Walles and Garcia, taken as
484 a whole, does not suggest the claimed subject matter.

485 There is no reference of record which teaches or suggests that the urethane/vinyl hybrid
486 polymer, once having been made in accordance with the method disclosed in
487 Vijayendran, can or should be cross linked. The Examiner has not pointed to any such
488 teaching in that patent. The Examiner attempts to avoid this rather untidy lack of disclosure by
489 quoting a passage from Vijayendran which talks about crosslinking (Col. 10, lines 58-69)
490 Unfortunately, the quote deals with the **manufacture** of the urethane/vinyl hybrid polymer itself.
491 That is why the polymer is not a mere blend. There is no disclosure about crosslinking the
492 finished hybrid.

493 Dependent claim 19, and those which depend from claim 19, dependent claim 22, and
494 those which depend from claim 22, claim 34 and claim 35 contain limitations regarding cross
495 linking of the urethane/vinyl hybrid polymer. Accordingly, claims 19, 22, 24, 25, 26, 27, 28, 30,
496 34 and 35 are drawn to subject matter not disclosed and not suggested in any reference of
497 record.

498 The disclosure of Garcia adds nothing to cure the deficiencies of Mitchell, Walles and
499 Vijayendran as references against the claims of this invention. Garcia may, indeed, disclose a
500 cross linking agent which Applicants have found can be used to crosslink the urethane/vinyl
501 hybrid polymer Vijayendran, but the disclosure of Garcia fails to cure the deficiencies of
502 Vijayendran itself. Garcia should be withdrawn.

503 **ISSUE 6**

504 There is no suggestion in either Mitchell or Vijayendran or Walles or Garcia to combine
505 one with the other to produce the claimed subject matter.

506 Specific Response to Comments of Examiner

507 Contrary to the assertions of the Examiner, the sticky polymer disclosed by Mitchell is
508 not the polymer disclosed by Vijayendran.

509 That the polymer of Vijayendran can be used as claimed in this invention does not “flow
510 naturally” from the assertion of Vijayendran that the polymer forms a flexible surface that does
511 protect a substrate, such as paper, metals, plastics, and wood, from solvents, corrodants and
512 abrasives. A flexible protective cover on a substrate does not, by that assertion, teach or
513 suggest a film on a capsule which does **not protect** material enclosed in the capsule.

514 Neither Vijayendran nor Appellants say anything at all about the permeability of the
515 polymer as a material of construction. Vijayendran does talk about a coating which is applied
516 by “conventional flexographic or gravure methods.” Applicants talk about a film made by a
517 fluidized bed process. The manufacturing techniques are different. One technique produces a

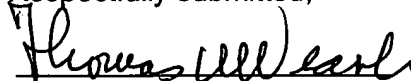
coating which obviously resists diffusion. The other technique produces a film which does not resist diffusion. In this regard claim 16 talks about a membrane which is permeable. There is nothing in the claim which says anything at all about the permeability of the material itself.

The "good balance" argument asserted by the Examiner is **specious**. Vijayendran did state that his coating has good balance. That statement cannot be interpreted to mean that Vijayendran deliberately placed defects in his continuous coating. Such defects would certainly defeat the very purpose of his protective coating. If Vijahendran had really intended to manufacture his protective coating in a way which would compromise the integrity of the coating, then he would have been explicit. Remember, Vijahendran specifically disclosed a coating which is applied by "conventional flexographic or gravure methods." He said nothing about modifying the coating or the method of making it.

There is nothing in the art that specifically teaches that a protective coating, such as taught by Vijayendran, also permits diffusion. If there is, then the Examiner has not cited it.

This application is in condition for allowance. Reconsideration and allowance is requested.

Respectfully submitted,



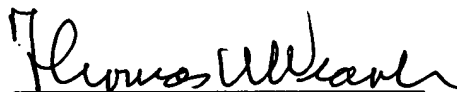
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Thomas R. Weaver

Registration No. 25,613

June 3, 2004
Date

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ENCLOSURE I

DEPENDENCY CLAIM PATTERN

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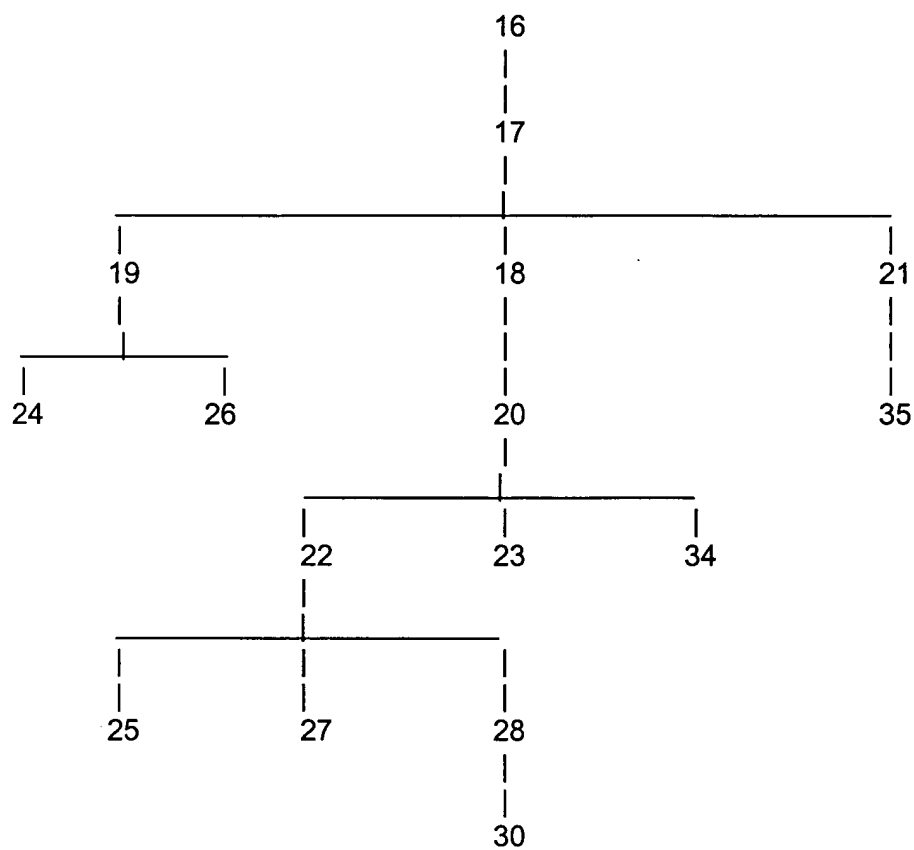
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ENCLOSURE II

COPY OF CLAIMS INVOLVED IN APPEAL

Claim 16

An article of manufacture comprising a capsule and a first chemical composition, said capsule having a hollow interior and an enclosing membrane wall having an interior surface and an exterior surface, wherein said first chemical composition is enclosed within said hollow interior of said capsule;

said membrane is permeable to water and aqueous solutions, but is not soluble in aqueous liquids, and includes at least a first material comprised of a polyurethane-vinyl polymer dispersion prepared by the simultaneous polymerization of a vinyl monomer and chain extension of an isocyanate-terminated polyurethane pre-polymer in the presence of water to thereby form a urethane/vinyl hybrid polymer; and

said first chemical composition is comprised of a solid, water-soluble chemical composition which is not reactive with, soluble in or a solvent for said membrane.

Claim 17

The article of claim 16 wherein said first chemical composition is selected from the group consisting of alkali, alkaline earth metal and ammonium halides, oxides, hydroxides, carbonates, bicarbonates, perborates, peroxides, percarbonates, bisulfates and persulfates.

Claim 18

The article of claim 17 wherein said membrane is a composite material comprised of said first material and further comprised of a second material, wherein said first material is a supporting matrix for said second material which is fixed in said supporting matrix;

said second material is a particulate solid, having a particle size in the range of from about 1 to about 15 microns, present in said composite material in an amount in the range of

from an amount greater than about 0 to about 50 percent of said particulate solid by total weight of said composite material;

said second material is different from said first material, and is not reactive with, soluble in or a solvent for said first material or said first chemical composition; and

said composite material is present in said article in an amount in the range of from about 10 to about 50 percent by weight of said composite material by weight of said article.

Claim 19

The article of claim 17 wherein said first material is reacted with a cross linking agent selected from the group consisting of polyaziridines, carbodiimides, epoxies and metal ion cross linkers.

Claim 20

The article of claim 18 wherein said second material is selected from the group consisting of silica, calcium carbonate, titanium dioxide, barium sulfate, calcium sulfate and mixtures thereof.

Claim 21

The article of claim 17 wherein said first chemical composition has a particle size in the range of from about 10 to about 60 mesh US Sieve series.

Claim 22

The article of claim 20 wherein said first material is reacted with a cross linking agent selected from the group consisting of polyaziridines, carbodiimides, epoxies and metal ion cross linkers.

Claim 23

The article of claim 20 wherein said first chemical composition has a particle size in the range of from about 10 to about 60 mesh US Sieve series.

627 **Claim 24**

628 The article of claim 19 wherein said cross linking agent is a polyaziridine.

629 **Claim 25**

630 The article of claim 22 wherein said cross linking agent is a polyaziridine.

631 **Claim 26**

632 The article of claim 19 wherein said first chemical composition has a particle size in the
633 range of from about 10 to about 60 mesh US Sieve series.

634 **Claim 27**

635 The article of claim 22 wherein said first chemical composition has a particle size in the
636 range of from about 10 to about 60 mesh US Sieve series.

637 **Claim 28**

638 The article of claim 22 wherein said second material is silica.

639 **Claim 30**

640 The article of claim 28 wherein said cross linking agent is a polyaziridine.

641 **Claim 34**

642 The article of claim 20 wherein said first material is reacted with a polyaziridine cross
643 linking agent.

644 **Claim 35**

645 The article of claim 21 wherein said first material is reacted with a polyaziridine cross
646 linking agent.